

**SYSTEM AND METHOD OF PREDICTING FUTURE
BEHAVIOR OF A BATTERY OF END-TO-END
PROBES TO ANTICIPATE AND PREVENT COMPUTER
NETWORK PERFORMANCE DEGRADATION**

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ABSTRACT OF THE DISCLOSURE

A diagnostic system in which, at every point in time, a forecast is made of the future response times of each EPP (End-to-end Probe Platform) probe in a battery of probes. Thresholds are established in terms of the distribution of future EPP values. The theory of Generalized Additive Models is used to build a predictive model based on a combination of a) data normally generated by network nodes, b) results of a battery of probes and c) profile curves reflecting expected response times (i.e. based on recent history) corresponding to this battery for various times of day, days of week, month of year, etc. The model is pre-computed, and does not have to be dynamically adjusted. The model produces, at regular intervals, forecasts for outcomes of various EPP probes for various horizons of interest; also, it produces thresholds for the respective forecasts based on a number of factors, including acceptable rate of false alarms, forecast variance and EPP values that are expected based on the recorded history. The system is capable of maintaining a pre-specified low rate of false alarms that could otherwise cause a substantial disturbance in network operation.